

The Claims

1. An integrated bell housing for a marine internal combustion engine, the bell housing carrying on its exterior one or more engine accessories such as a supercharger, an alternator and a water pump, the marine engine having a crank shaft extending into an interior space of the bell housing and coupled to a flywheel, the bell housing enclosing a geared transmission which is coupled to said crank shaft, the integrated bell housing comprising:

means for mounting said supercharger onto said exterior of said bell housing;

said fly wheel having first gear thereon and carrying a second gear;

a first complementary gear, cooperating with said first gear, said first complementary gear coupled to a supercharger drive shaft rotatably mounted through said bell housing such that said fly wheel drives said supercharger;

means for mounting said water pump onto said exterior of said bell housing;

a water pump drive shaft keyed to said crank shaft and rotatably mounted through said bell housing such that said crank shaft drives said water pump;

means for mounting said alternator onto said exterior of said bell housing; and

a second complementary gear, cooperating with said second gear, said second complementary gear coupled to an alternator drive shaft rotatably mounted through said bell housing such that said fly wheel drives said alternator.

2. An integrated bell housing for a marine engine as claimed in claim 1 wherein said first gear is a face gear on said fly wheel and said first complementary gear is a pinion gear.

3. An integrated bell housing for a marine engine as claimed in claim 1 wherein said fly wheel includes a damper plate, said damper plate having said second gear thereon and said second complementary gear being driven by the damper plate attached to said fly wheel.
4. An integrated bell housing for a marine engine as claimed in claim 1 wherein said second complementary gear is a peripheral gear on an edge of said flywheel.
5. An integrated bell housing for a marine engine as claimed in claim 1 wherein said supercharger drive shaft and said water pump drive shaft and said alternator drive shaft are sealingly and rotatably mounted through said bell housing.
6. An integrated bell housing for a marine engine as claimed in claim 2 wherein said fly wheel includes a damper plate, said damper plate having said second gear thereon and said second complementary gear being driven by the damper plate attached to said fly wheel.
7. An integrated bell housing for a marine engine as claimed in claim 2 wherein said second complementary gear is a peripheral gear on an edge of said flywheel.
8. An integrated bell housing for a marine engine as claimed in claim 6 wherein said supercharger drive shaft and said water pump drive shaft and said alternator drive shaft are sealingly and rotatably mounted through said bell housing.
9. An integrated bell housing for a marine engine as claimed in claim 7 wherein said supercharger drive shaft and said water pump drive shaft and said alternator drive shaft are sealingly and rotatably mounted through said bell housing.
10. An integrated bell housing for a marine internal combustion engine, the bell housing carrying on its exterior an alternator and a water pump, the marine engine having a crank shaft extending into

an interior space of the bell housing and coupled to a flywheel, the bell housing enclosing a geared transmission which is coupled to said crank shaft, the integrated bell housing comprising:

said fly wheel carrying an accessory gear;

means for mounting said water pump onto said exterior of said bell housing;

a water pump drive shaft keyed to said crank shaft and rotatably mounted through said bell housing such that said crank shaft drives said water pump;

means for mounting said alternator onto said exterior of said bell housing; and

a complementary accessory gear, cooperating with said accessory gear, said complementary accessory gear coupled to an alternator drive shaft rotatably mounted through said bell housing such that said fly wheel drives said alternator.

11. An integrated bell housing for a marine engine as claimed in claim 10 wherein said fly wheel includes a damper plate, said damper plate having said accessory gear thereon and said complementary accessory gear being driven by the damper plate attached to said fly wheel.

12. An integrated bell housing for a marine engine as claimed in claim 10 wherein said complementary accessory gear is a peripheral gear on an edge of said flywheel.

13. An integrated bell housing for a marine engine as claimed in claim 11 wherein said water pump drive shaft and said alternator drive shaft are sealingly and rotatably mounted through said bell housing.

14. An integrated bell housing for a marine engine as claimed in claim 12 wherein said water pump drive shaft and said alternator drive shaft are sealingly and rotatably mounted through said bell housing.

15. An integrated bell housing for a marine internal combustion engine, the bell housing carrying on its exterior a supercharger, an alternator and a water pump, the marine engine having a crank shaft extending into an interior space of the bell housing and coupled to a flywheel, the bell housing enclosing a geared transmission which is coupled to said crank shaft, the integrated bell housing comprising:

means for mounting said supercharger onto said exterior of said bell housing;

said fly wheel having first gear thereon and carrying a second gear;

a first complementary gear, cooperating with said first gear, said first complementary gear coupled to a supercharger drive shaft rotatably mounted through said bell housing such that said fly wheel drives said supercharger;

means for mounting said water pump onto said exterior of said bell housing;

a water pump drive shaft keyed to said crank shaft and rotatably mounted through said bell housing such that said crank shaft drives said water pump;

means for mounting said alternator onto said exterior of said bell housing; and

a second complementary gear, cooperating with said second gear, said second complementary gear coupled to an alternator drive shaft rotatably mounted through said bell housing such that said fly wheel drives said alternator.

16. An integrated bell housing for a marine engine as claimed in claim 15 wherein said first gear is a face gear on said fly wheel and said first complementary gear is a pinion gear.

17. An integrated bell housing for a marine engine as claimed in claim 15 wherein said fly wheel includes a damper plate, said damper plate having said second gear thereon and said second complementary gear being driven by the damper plate attached to said fly wheel.

18. An integrated bell housing for a marine engine as claimed in claim 15 wherein said second complementary gear is a peripheral gear on an edge of said flywheel.
19. An integrated bell housing for a marine engine as claimed in claim 15 wherein said supercharger drive shaft and said water pump drive shaft and said alternator drive shaft are sealingly and rotatably mounted through said bell housing.
20. An integrated bell housing for a marine engine as claimed in claim 16 wherein said fly wheel includes a damper plate, said damper plate having said second gear thereon and said second complementary gear being driven by the damper plate attached to said fly wheel.
21. An integrated bell housing for a marine engine as claimed in claim 16 wherein said second complementary gear is a peripheral gear on an edge of said flywheel.
22. An integrated bell housing for a marine engine as claimed in claim 20 wherein said supercharger drive shaft and said water pump drive shaft and said alternator drive shaft are sealingly and rotatably mounted through said bell housing.
23. An integrated bell housing for a marine engine as claimed in claim 21 wherein said supercharger drive shaft and said water pump drive shaft and said alternator drive shaft are sealingly and rotatably mounted through said bell housing.
24. An integrated bell housing for a marine internal combustion engine, the bell housing carrying on its exterior one or more engine accessories such as a supercharger, an alternator and a water pump, the marine engine having a crank shaft extending into an interior space of the bell housing and coupled to a flywheel, the integrated bell housing comprising:
- means for mounting said supercharger onto said exterior of said bell housing;
 - said fly wheel having first gear thereon and carrying a second gear;

a first complementary gear, cooperating with said first gear, said first complementary gear coupled to a supercharger drive shaft rotatably mounted through said bell housing such that said fly wheel drives said supercharger;

means for mounting said water pump onto said exterior of said bell housing;

a water pump drive shaft keyed to said crank shaft and rotatably mounted through said bell housing such that said crank shaft drives said water pump;

means for mounting said alternator onto said exterior of said bell housing; and

a second complementary gear, cooperating with said second gear, said second complementary gear coupled to an alternator drive shaft rotatably mounted through said bell housing such that said fly wheel drives said alternator.

25. An integrated bell housing for a marine engine as claimed in claim 24 wherein said first gear is a face gear on said fly wheel and said first complementary gear is a pinion gear.

26. An integrated bell housing for a marine engine as claimed in claim 24 wherein said fly wheel includes a damper plate, said damper plate having said second gear thereon and said second complementary gear being driven by the damper plate attached to said fly wheel.

27. An integrated bell housing for a marine engine as claimed in claim 24 wherein said second complementary gear is a peripheral gear on an edge of said flywheel.

28. An integrated bell housing for a marine engine as claimed in claim 25 wherein said fly wheel includes a damper plate, said damper plate having said second gear thereon and said second complementary gear being driven by the damper plate attached to said fly wheel.

29. An integrated bell housing for a marine engine as claimed in claim 25 wherein said second complementary gear is a peripheral gear on an edge of said flywheel.

30. An integrated bell housing for a marine internal combustion engine, the bell housing carrying on its exterior an alternator and a water pump, the marine engine having a crank shaft extending into an interior space of the bell housing and coupled to a flywheel, the integrated bell housing comprising:

said fly wheel carrying an accessory gear;

means for mounting said water pump onto said exterior of said bell housing;

a water pump drive shaft keyed to said crank shaft and rotatably mounted through said bell housing such that said crank shaft drives said water pump;

means for mounting said alternator onto said exterior of said bell housing; and

a complementary accessory gear, cooperating with said accessory gear, said complementary accessory gear coupled to an alternator drive shaft rotatably mounted through said bell housing such that said fly wheel drives said alternator.

31. An integrated bell housing for a marine engine as claimed in claim 30 wherein said fly wheel includes a damper plate, said damper plate having said accessory gear thereon and said complementary accessory gear being driven by the damper plate attached to said fly wheel.

32. An integrated bell housing for a marine engine as claimed in claim 30 wherein said complementary accessory gear is a peripheral gear on an edge of said flywheel.